

Part 3: The Learner Principles of Learning

I. Educational Psychology

1. Gage, NL and Berliner, DC: *Educational Psychology*. 2nd edition. Chicago: Rand-McNally, 1979. pp. 800.
This is the best general textbook of educational psychology available, especially for relating principles of learning to the tasks of the teacher. Although most of the examples cited relate to elementary school, the application of the principles of family medicine education are clear.
2. Gagne, RM: *The Conditions of Learning*. 3rd edition. New York: Holt, Rinehart and Winston, 1977.
Gagne emphasizes the principle that not all learning is the same, discussing five varieties of learning outcome: verbal information, intellectual skills, cognitive strategies, motor skills and attitudes. He then elaborates on the specific internal and external conditions which facilitate learning of each type. This is a very practical way of organizing what we know about human learning and linking it to the tasks of the teacher.
3. Gagne, RM: *Essentials of Learning for Instruction*. Hinsdale, Illinois: The Dryden Press, 1975. pp. 204.
A briefer coverage of some of the issues described in no. 2 above.
4. Gagne, Robert M and Briggs, Leslie J: *Principles of Instructional Design*. 2nd edition. Toronto: Holt, Rinehart and Winston, 1979. pp. 321.
Gagne summarizes material from the *Conditions of Learning* and links this to an organized approach to course and curriculum design. The writing style is ponderous and repetitive but the book's content is worth the struggle.
5. Lefrancois, Guy R: *Psychology for Teaching*. 2nd edition. Belmont, California: Wadsworth Publishing Co., Inc., 1975. pp. 372.
Not as comprehensive as Gage and Berliner or the other texts on the psychology of learning, but an excellent outline of principles of learning. Witty and enjoyable.
6. Bourne, LE Jr; Dominowski, RL and Loftus, EF: *Cognitive Processes*. Englewood Cliffs, New Jersey: Prentice-Hall 1979. pp. 408.
A clearly written explanation of the information processing model of learning, longterm retention, retrieval, memory structure, problem solving and thinking.
7. Lindsay, Peter H and Norman, Donald A: *Human Information Processing—An Introduction to Psychology*. 2nd edition. New York: Academic Press, 1977. pp. 777.
A basic textbook of educational psychology using the information processing model as an organizing framework.
8. Travers, RMW: *Essentials of Learning*. 4th edition. New York: MacMillan, 1977.
A standard textbook on the psychology of learning. Detailed and somewhat ponderous, but very comprehensive.
9. Anderson, RC and Faust, GW: *Educational Psychology*. New York: Harper and Row, 1973.
Another basic textbook on the psychology of learning. The author has incorporated many of the principles of learning into his writing style, e.g., questioning, stimulus variation, summaries and tasks for the reader to complete. Not as 'heavy going' as Travers.
10. Hilgard, Ernest R and Bower, Gordon: *Theories of Learning*. 4th edition. Englewood Cliffs, New Jersey: Prentice-Hall, 1975.
A standard textbook describing theories of learning, e.g., Skinner, Hull, Pavlov, Piaget, Tolman. This includes material on the psychology of learning, but the focus is on theoretical issues.
11. Hergenhahn, BR: *An Introduction to Theories of Learning*. Englewood Cliffs, New Jersey: Prentice-Hall, 1976. pp. 402.
An introduction to the same material covered in greater depth by no. 10 above.
12. Sprinthall, Richard C and Sprinthall, Norman A: *Educational Psychology: A Developmental Approach*. 2nd edition. Massachusetts: Addison-Wesley Publishing Co., 1977.
A standard general textbook of educational psychology, emphasizing human development and individual differences.
13. McKeachie, Wilbert J (editor): *Learning, Cognition, and College Teaching*. San Francisco: Jossey-Bass, 1980. pp. 116 (No. 2 in the series *New Directions for Teaching and Learning*).

Discusses specific applications of cognitive learning principles to college teaching: aptitude-treatment-interaction, information processing in lectures, and research on problem solving. This monograph highlights some fascinating ideas but is somewhat superficial.

14. Shulman, Lee S: Cognitive Learning and the Educational Process. *Journal of Medical Education* 45(11):90-100, November, 1970, Part 2.

This is a well written, practical summary of factors which affect human learning. The author discusses entering characteristics—knowledge, aptitude, attitudes and values and how they influence learning. He then discusses the relationship between application and instructional settings and how this can enhance or hinder transfer. He concludes with some comments on curriculum change.

15. Butler, F Coit: The Major Factors That Affect Learning: A Cognitive Process Model. *Educational Technology* 17:5-12, July, 1977.

This is a superb review of what is known about human learning and how this knowledge can be used to improve teaching. Butler discusses the importance of individual differences in learners, motivation, organization, learner involvement, selective feedback, repetition and reinforcement, generalization and transfer to new situations.

16. Department of Family and Community Medicine: *Clinical Instruction Series—The Teaching-Learning Process*. University of Missouri-Columbia, 1979, pp. 82.

This is a self-instructional manual based on Gagne's Conditions of Learning. The manual is very brief and provides only a superficial overview, but the chapters on adult learning and self-directed learning are useful.

17. Ausubel, David P: *Learning Theory and Classroom Practice*. Ontario Institute for Studies in Education Bulletin No. 1, 1967.

18. Lepper, MR and Greene, D: When Two Rewards are Worse than One: Effects of Extrinsic Rewards on Intrinsic Motivation. *Phi Delta Kappan* 56:565-566, 1974/75.

19. Magill, Pickard A: *Motor Learning—Concepts and Applications*. Dubuque, Iowa: Wm. C. Brown Co. Publishers, 1980.

A good basic text of learning applied to the motor domain.

II The Learner

1. Coombs, Robert H and Vincent, Clark E (editors): *Psychosocial Aspects of Medical Training*. Springfield: Charles C. Thomas, 1971, pp. 556.

2. Knight, James A: *Medical Student—A Doctor in the Making*. New York: Appleton-Century-Crofts, 1973.

Discusses sex and marriage, psychological problems, students' relationships with faculty, developing tolerance for uncertainty, specialty choice, ethics, death and dying, women medical students and "the search for the ideal medical student".

3. Engel, George C: Care and Feeding of the Medical Student. The Foundation for Professional Competence. *JAMA* 215: 1135-1141, 1971.

4. Dennis, Lawrence J: Maslow and Education. *The Educational Forum* 40(1):49-54, November, 1975/76.

5. Zabarenko, Ralph N and Zabarenko, Lucy: *The Doctor Tree*. University of Pittsburgh Press, 1978.

Describes a concept of development of "paracognitive" skills during medical school and an approach to measuring the acquisition of these skills. These skills include:

- Balancing the oscillation between objectivity and empathy
- Appropriate management of nurturant tendencies and executive necessities
- Adequate regulation and control of needs for omnipotence, by appreciation of the realities of medical work, especially the tolerance for uncertainty
- Formation of an internal ideal of physicianhood
- Maturation of professional identity

6. Coombs, Robert H: *Mastering Medicine—Professional Socialization in Medical School*. New York: The Free Press, 1978, pp. 288.

The author describes a decade of research in which he followed an entire class of medical students from the time of their acceptance into school through the four years of training into the beginning of residency programs. The author explores the student culture and how this affects personal adjustment and interaction with the faculty. How students cope with stress is analyzed, as well as the development of a professional identity, personal attributes and values.

7. Eichna, Ludwig: Medical-School Education, 1975-1979 A Student's Perspective. *New England Journal of Medicine*, 303 (13): 727-734, 1980.

Records the personal reactions and ideas of a retired chairman of a Department of Medicine who went through medical school again!

8. McGraw, Richard M: Relationships Between Teacher, Student and Patient. *JAMA* 224:225-228, 1973.

9. Hefernan, Michael: Factors influencing adult learning within medicine (keeping up-to-date with a minimum of fuss). *Australian Family Physician*, 6:727-735, 1977.

A brief overview of some of the principles of adult learning ("andragogy").

10. McGlynn, Thomas J; Wynn, Jonathan B and Munzenrider, Robert F: Resident Education in Primary Care: How Residents Learn. *Journal of Medical Education*, 53:473-481, 1978.

In this study, the authors identified the characteristics of resident-patient relationships which residents rate as educationally productive and contrasted these with experiences rated non-productive. "In productive experiences residents more often learn through identifying and treating diseases, establishing relationships with patients and providing follow up care, using faculty supervisors and consultants for peer review, and reading about their patients' problems." Factors inhibiting education include inappropriate selection of patients, inefficient practice operation, inadequate

nursing support, inadequate time to evaluate new patients, inadequate supervision, small work space, inadequate ancillary personnel and conflict of responsibilities.

III Problem Solving

1. Feightner, JW; Barrows, HS; Neufeld, VR and Norman, GR: Solving Problems: How Does the Family Physician Do It? *Canadian Family Physician*. 23:457-461, 1977.

2. McWhinney, IR: Problem Solving and Decision Making in Primary Medical Practice. *Canadian Family Physician*. 18:109-114, 1972.

3. Elstein, Arthur S, et al: Methods and Theory in the Study of Medical Inquiry. *Journal of Medical Education*. 47:85-92, 1972.

4. Crutchfield, RS: Nurturing the Cognitive Skills of Productive Thinking. In: Clarizio, HF; Craig RC; Mehren WA (editors) *Contemporary Issues in Educational Psychology*. 3rd edition. Boston: Allyn and Bacon, 1977.

5. Barrows, Howard S and Tamblyn, Robyn M: *Problem-Based Learning—An Approach to Medical Education*. New York: Springer Publishing Company, 1980.

Problem-based learning is defined as "the learning which results from the process of working toward the under-

standing or resolution of a problem . . . a problem in this context refers to unsettled, puzzling, unsolved issues that need to be resolved".

6. Young, Robert E (editor): Fostering Critical Thinking. *New Directions for Teaching and Learning*. Vol. 1, No. 3, 1980.

This monograph contains several articles "written with one assumption in mind: to know more about critical thinking—what it is, what influences it, what works and what does not in teaching and in testing it". Yinger's article "Can We Really Teach Them to Think?" provides an excellent overview of factors affecting critical thinking and how this understanding can be utilized to promote it.

7. Barrows, HS; Feightner, JW; Neufeld, VR and Norman, GR: *Analysis of the Clinical Methods of Medical Students and Physicians*. Hamilton, Ontario: McMaster University, 1978.

This document describes the results of studies on the clinical methods of medical students and practicing physicians (internists and family physicians). The main conclusions of the study are:

1. About six multiple diagnostic hypotheses are formed very early in the encounter.
2. These early hypotheses are central to the subsequent search for information.

3. Clinical problem-solving remains relatively constant at all educational levels, except for the content of the hypotheses.

4. The outcomes of the encounter—diagnosis, investigations, and management—are related to educational level.

5. Family physicians ask fewer questions and spend less time than internists and tend to weight findings against more hypotheses than consultants.

The authors suggest that, since medical students possess problem-solving skills on entry to medical school, instructional strategies should focus on the diagnostic hypotheses and should search for strategies to enhance storage and retrieval of diagnostic hypotheses from memory.

8. Gagne, Robert M: Learnable Aspects of Problem Solving. *Educational Psychologist* 15(2):84-92, 1980.

Gagne argues that there are several aspects of problem solving that are both learnable and teachable: intellectual skills, organized knowledge and problem-solving strategies. He distinguishes between "problem-solving strategies" which he sees as specific to the task and more general "executive strategies which enable problem solvers to weigh and choose the best strategy for the particular task". These skills appear to result from experience and reflective thought, and cannot be taught directly.

Part 4: Teaching—Curriculum Development and Learning Evaluation

The Teacher: Teaching Skills

1. Eble, Kenneth E: *The Craft of Teaching*. San Francisco: Jossey-Bass Publishers, 1976.

An excellent introduction to university teaching. Discusses myths of teaching, teaching methods, selection of reading assignments and evaluation. Beautifully written.

2. Hyman, Ronald T: *Ways of Teaching*. 2nd edition. Toronto: JB Lippincott Co., 1974, pp. 371 (paperback)

Describes the discussion method, recitation and lecture, role-playing, questioning, observing and evaluating. Also has an excellent overview of the use of objectives.

3. Joyce, Bruce and Weil, Marsha: *Models of Teaching*. 2nd edition. Englewood Cliffs, New Jersey: Prentice-Hall, 1980, pp. 499.

"The purpose of this book is to identify for the teacher and the curriculum maker a range of models of teaching—approaches to creating environments for learning—and a way of thinking that can be used to analyze

these approaches, compare and contrast them, and decide what educational purposes they can serve."

4. Miller, John P: *Humanizing the Classroom—Models of Teaching in Affective Education*. New York: Praeger Publishers, 1976, pp. 183.

Based on the book by Joyce and Weil, this book describes approaches to affective teaching.

5. Orme, Michael: *Teaching Strategies Kit*. Ontario Institute for Studies in Education, 1977, pp. 38.

This brief outline describes a general model of teaching and discusses several aspects of learning that relate to effective teaching.

6. Gazda, George M: *Human Relations Development—A Manual for Educators*. 2nd edition. Boston: Allyn and Bacon Inc., 1977.

This book is based on the "Carkhuff model" of the helping relationship. Separate chapters are devoted to each of the "part" skills: attending, perceiving and communicating warmth, perceiving and responding with concreteness, genuineness, self-disclosure, confrontation, perceiving and re-

sponding with immediacy of relationship, responding with information and action. There are also chapters on non-verbal behaviors and strategies for change.

The book contains numerous exercises to test the reader's understanding. A scale is provided which can be used to measure each "part" skill in clear, behavioral terms. For anyone interested in improving his interpersonal skills as a teacher this is a valuable book.

7. Carkhuff, Robert R; Berenson, David H and Pierce, Richard M: *The Skills of Teaching: Interpersonal Skills*. Amherst, Massachusetts: Human Resource Development Press, 1977.

In this book the Carkhuff model is greatly simplified from the earlier versions. The learner is described as proceeding through repeated cycles of exploring, understanding and acting. The helper (teacher, counsellor, friend, etc.) facilitates this process by attending, responding, personalizing and initiating. The book contains useful exercises and scales to measure each of the helping skills.

8. Carkhuff, Robert R; Berenson, David H and Pierce, Richard M: *The Skills of Teaching: Interpersonal Skills, Teacher's Guide*. Amherst, Massachusetts: Human Resource Development Press, 1977.

A well-designed outline full of suggestions about how to teach interpersonal skills to teachers. The authors suggest three levels of intensity: a skills survey course (15-20 hours), a skills acquisition course (35-45 hours) and a skills application course (80-90 hours).

9. Eden, Helen: *A Selected Annotated Bibliography on Characteristics of Good Teaching*. Miami: National Center for Faculty Development in the Health Professions, 1978 (mimeographed).

The author summarizes a small collection of articles on various components of effective clinical teaching.

10. Axelrod, Joseph: *The University Teacher as Artist, Toward an Aesthetics of Teaching with Emphasis on the Humanities*. San Francisco: Jossey-Bass Publishers, 1973, pp. 246.

Part One presents four models of "evocative" teaching, a set of teaching modes that are contrasted, on the one hand, with lecturing and on the other with "didactic" teaching. Part Two presents transcripts of three classes by the same professor of literature over 12 years, demonstrating his evolution from "teaching books" through "training minds" to "working with students as people". Part Three uses systems analysis to describe the university setting and Part Four deals with educational reform.

11. Milton, Ohmer and Associates: *On College Teaching—A Guide to Contemporary Practices*. San Francisco: Jossey-Bass Publishers, 1978, pp. 404.

The authors discuss a variety of teaching methods—lecturing, leading discussion, the personalized system of instruction, using computers, contract learning, specifying and achieving competencies, simulation/gaming and field experience. Each author reports research information about the effectiveness of a particular approach, analyzes both benefits and drawbacks and offers practice strategies for making the approach succeed. There are also

chapters on clarifying course objectives, working with older students and evaluating teaching.

12. McKeachie, Wilbert J: *Teaching Tips—A Guidebook for the Beginning College Teacher*. 7th edition. Lexington, Massachusetts and Toronto: DC Heath and Co., 1978, pp. 338.

This excellent manual is full of practical advice for college teachers on course preparation, selecting textbooks, lecturing, discussion groups, independent study, audiovisual techniques, roleplaying, games, simulations and examination. McKeachie also discusses ethical standards in teaching; motivation, learning and cognition; personalizing education; doing and evaluating research on teaching; student ratings of faculty; improving teaching; faculty attitudes and teaching effectiveness.

13. Weil, Marsha and Joyce, Bruce: *Information Processing Models of Teaching: Expanding Your Teaching Repertoire*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1978, pp. 278.

This book is designed to equip teachers with the essential knowledge and skills to use three alternative teaching and learning strategies confidently—concept attainment, inquiry training and advance organizer models.

14. Weil, Marsha and Joyce, Bruce: *Social Models of Teaching, Expanding Your Teaching Repertoire*. Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1978, pp. 245.

Three models (simulation, role playing and jurisprudential) are aimed at helping democratic processes and creating a more humane society. For each model the authors provide a solid theoretical base followed by examples of teaching behavior and ways the teacher might practice the strategy discussed.

15. Weil, Marsha; Joyce, Bruce and Kluwin, Bridget: *Personal Models of Teaching, Expanding your Teaching Repertoire*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1978, pp. 168.

Using the same framework described above, this volume provides an outline of two models that focus on the learner and the teacher.

16. Messick, Samuel and Associates: *Individuality in Learning*. San Francisco: Jossey Bass Publishers, 1976, pp. 382.

This book focuses on cognitive styles—the manner in which a person acquires knowledge and his characteristic modes of processing information and experience. The authors assess the educational importance of these stylistic factors, especially as they bear on teaching and learning; examine the learning benefits of matching (or deliberately mismatching) students and treatments; look at sexual and cultural differences that influence cognitive skills and creativity; and discuss the psychological conditions of a truly creative educational environment.

17. Eble, Kenneth E (editor): *Improving Teaching Styles*. San Francisco: Jossey-Bass Publishers, 1980 (No 1 in the series New Directions for Teaching and Learning), pp. 107.

This monograph discusses the attempts of several teachers to modify their teaching styles. Axelrod summarizes the three stages in a teaching career discussed elsewhere (see Axelrod: *The University Teacher as Artist* above) and adds a fourth stage in which he returns very much to where he started. Another author discusses basic and advanced skills of teaching. Several authors discuss approaches to improving teaching including faculty growth contracts.

18. Young, Robert E: *Fostering Critical Thinking*. San Francisco: Jossey-Bass Publishing, 1980 (No. 3 in the series New Directions for Teaching and Learning), pp. 103.

This monograph provides a description and analysis of approaches to the teaching of problem solving. There are also chapters on the assessment of critical thinking.

19. Irby, David M: *Clinical Teacher Effectiveness in Medicine, Journal of Medical Education*, 53: 808-815, 1978.

Characteristics of best and worst teachers are described by a random sample of medical school faculty, residents and third and fourth year students. Best clinical teachers are described as enthusiastic, clear, well organized and adept at interacting with students and residents. Worst clinical teachers lack these skills and are char-

acterized by negative personal attributes.

20. Stephens, G. Gayle: On Becoming a Teacher of Family Medicine. *Journal of Family Practice*. 4(2):325-327, 1977.

21. Hildebrand, Milton: The character and skills of the effective professor. *Journal of Higher Education*. 44:41-50, January 1973.

22. Magraw, Richard M: Relationships between Teacher, Student and Patient. *JAMA* 224(2): 225-228, 1973.

23. Gaff, Jerry G: *Toward Faculty Renewal—Advances in Faculty, Instructional and Organizational Development*. San Francisco: Jossey-Bass Publishers, 1975.

24. Centra, John A (editor): *Renewing and Evaluating Teaching. New Directions for Higher Education*. San Francisco: Jossey-Bass, No. 17, Spring 1977.

25. Guskin, Alan E (editor): *The Administrator's Role in Effective Teaching. New Directions for Teaching and Learning*. San Francisco: Jossey-Bass, 1981, No. 5.

26. Carkhuff Associates and The Project's Advisory Committee of National Experts: *Teaching Interpersonal Skills to Health Professionals*. Washington, DC.: U.S. Department of Health, Education and Welfare, 1978.

A series of seven manuals produced by a special project studying the teaching of interpersonal skills to the health professionals and sponsored by the U.S. Department of Health, Education and Welfare.

In addition to the manuals the project developed a set of seven videotapes which demonstrate many of the skills addressed in the manuals, and a two volume resource document. Volume I contains a review of the literature on the teaching of interpersonal skills to health professionals using videototechnology. Also included are the findings of a three-stage survey process which investigated the teaching of interpersonal skills to family practice residents, nurse practitioners, medical students and physician assistants. Volume 2 presents the survey findings for 393 instructional programs on the teaching of interpersonal skills.

27. Dewey, John: *Experience and*

Education. London: Collier Macmillan Publishers, 1938, pp. 91.

28. Piaget, Jean: *To Understand is to Invent—The Future of Education*. New York: Grossman Publishers, 1973, pp. 148.

29. Woodruff, Asahel D: *Basic Concepts of Teaching*. Scranton: Chandler Publishing Co., 1961.

30. Sanders, Norris M: *Classroom Questions—What Kinds?* New York: Harper and Row, 1966, pp. 176.

31. Bergevin, Paul; Morris, Dwight and Smith, Robert M: *Adult Education Procedures—A Handbook of Tested Patterns for Effective Participation*. New York: The Seaburg Press, 1963, pp. 245.

32. Curry, Hiram B; Kerr, Roby N and Johnson, Alan H: *Teacher Preparation for Family Practice. Australian Family Physician*. 2:176-182, 1973.

33. Harris, CM: A Teaching Methods Course in Liverpool for General Practitioners. *British Journal of Medical Education* 4:419-517, 1970.

34. Berquist, William H and Phillips, Steven R: *A Handbook for Faculty Development Vol I and II*. Washington, DC.: The Council for the Advancement of Small Colleges, 1975 and 1977.

These two volumes contain a collection of exercises, games, questionnaires and ideas that can be used as part of any faculty development program or workshop. The authors also provide several useful overviews of different aspects of faculty development e.g., a comprehensive approach to faculty development; organizational development; designing a faculty development workshop.

35. Noonan, John F: *Learning about Teaching*. San Francisco: Jossey-Bass Inc., 1980, pp. 102.

This monograph outlines a variety of approaches to continuing improvement of teaching—letters of reflection, one-to-one faculty development, and self-evaluation. In one chapter "A Lesson in Learning" Emily Hancock describes her emotional reaction to becoming a graduate student. Thomas V. McGovern's chapter on "The Dynam-

ics of Mentoring" is a valuable contribution to our understanding of the mentoring process in teaching and learning.

36. Bland, Carole J: *Faculty Development through Workshops*. Springfield: Charles. C. Thomas, 1980, pp. 218.

This is both a 'how to' handbook and a brief overview of some principles of education related to putting on workshops to teach the teachers of family medicine. The appendices contain an outline of family medicine faculty abilities, needs assessment questionnaire for faculty, examples of simulated problems for teachers and a bibliography of useful references.

37. Cantrell, Ted: How Do Medical School Staff Learn to Teach? *Lancet* 2:724-727, 1973.

38. Cantrell, EG: A Course in Teaching Methods (A Consumer Report). *British Journal of Medical Education* 6:37-43, 1972.

39. Long, GEC; Harris, CM and Byrne, PS: A Method of Teaching Counselling. *Medical Education* 10:198-204, 1976.

40. Mosston, Muska: *Teaching: From Command to Discovery*. Belmont, California: Wadsworth Publishing Co., 1972, pp. 189.

An excellent overview of a wide spectrum of teaching styles. The author provides a unifying framework based on whether the teacher or student makes the decisions in the pre-impact, impact and post-impact phases of instruction.

41. Black, Harvey H (Bill): The Effect of Career Change from Private Practice to Full-Time Family Practice Faculty. *Journal of Family Practice* 4(4):701-706, 1977.

This study investigated the timing and extent of the emotional impact of career change in 33 selected family physicians who moved into fulltime teaching in family medicine after at least 15 years in private practice.

42. Bland, Carole J: Guidelines for Planning Faculty Development Workshops. *Journal of Family Practice* 5(2):235-241, 1977.

This article reviews the literature on faculty development through workshops. Consistent components of effective faculty development work-

shops are presented as guidelines for future workshop planners.

43. Tiberius, Richard G: Interpreting Educational Concepts for the Teaching Family Physician: Some Parallels Between Patient Care and Undergraduate Clinical Education. *Journal of Family Practice* 5(3):395-398, 1977.

The author elaborates on the parallels between the educational concepts of objectives, curriculum and evaluation and patient care. The author hopes to encourage physicians to view their teaching as an analog of clinical skills that are already familiar to them.

44. McWhinney, IR: Teaching the principles of family medicine. *Canadian Family Physician* 27:801-804, 1981.

45. Steinert, Yvonne; Golden, Morrie and Klein, Michael: Teaching the Behavioral Sciences in Family Medicine. *Canadian Family Physician* 27:807-811, 1981.

46. Tiberius, Richard: Teaching and Learning Medical Ethics. *Canadian Family Physician* 27:813-816, 1981.

47. MacLachlan, Richard and Curtis, Donna: Through the Looking Glass: History-Taking Revisited. *Canadian Family Physician* 27:827-829, 1981.

48. Anderson, John: Teaching Analytical Skills. *Canadian Family Physician* 27:843-847, 1981.

49. Stelling, JG; Carrier, A and Waller, M: The Family Express: Trouble on the Line. *Canadian Family Physician* 27:821-825, 1981.

50. Hennen, Brian KE: Learning Continuity of Care. *Canadian Family Physician* 27:831-833, 1981.

Special Teaching Techniques

1. Schmuck, Richard A and Schmuck, Patricia A: *Group Processes in the Classroom*. Dubuque, Iowa: Wm. C. Brown Co., 1971.

2. Potter, David and Anderson, Martin P: *Discussion: A Guide to Effective Practice*. 2nd edition, Belmont: Wadsworth Publishing, 1970.

3. McLeish, John; Matheson,

Wayne and Park, James: *The Psychology of the Learning Group*. London: Hutchinson University Library, 1973, pp. 221.

4. Hill, Wm Fawcett: *Learning Through Discussion—A Guide for Leaders and Members of Discussion Groups*. 2nd edition. London: Sage Publications Ltd., 1978.

5. Sheffield, Edward F (editor): *Teaching in the Universities—No One Way*. Montreal: McGill-Queen's University Press, 1974, pp. 252.

6. Holcomb, J David and Garner, Arthur E: *Improving Teaching in Medical Schools—A Practical Handbook*. Springfield, Illinois: Charles C. Thomas, 1973, pp. 225.

7. Barrows, HS: *Simulated Patients*. Springfield, Illinois: Charles C. Thomas, 1971.

8. Knowles, Malcolm: *Self-Directed Learning*. New York: Association Press, 1975.

9. Berger, Milton M: *Videotape Techniques in Psychiatric Training and Treatment*. New York: Brunner/Mazel Publishers, 1978, pp. 406.

10. Murray, HG: How Do Good Teachers Teach? An Observational Study of the Science Lectures Receiving Low, Medium and High Teacher Ratings. *Ontario Universities Program for Instructional Development Newsletter*. No. 14, February 1977.

11. Murray, HG: Ten Ways of Improving the Lecture Method of Teaching. *Ontario Psychologist* 10:7-19, 1978.

12. Morrissy, Joseph R and McCullough, Dennis: Teaching by Chart Review in a Family Medicine Residency Program. *Journal of Family Practice*. 6(5):1107-1108, 1978.

13. Schmidt, David D and Messner, Edward: The Use of Video-Tape Techniques in the Psychiatric Training of Family Physicians. *Journal of Family Practice*. 5(4):585-588, 1977.

14. Tiberius, Richard G: *Materials to Accompany a Workshop to Improve Small Group Teaching and Learning*. Toronto: University of Toronto, 1979.

The first section presents an overview of the teaching improvement process. Then the author presents a list of valuable guidelines for the teacher of small groups. Finally, there is a series of readings on small group teaching and learning.

15. Denham, John W: Educational Obstacles to Learning Diagnosis. *Journal of Family Practice*. 12(4):665-669, 1981.

16. Zabarenko, Ralph N; Magero, James and Zabarenko, Lucy: Use of Videotape in Teaching Psychological Medicine. *Journal of Family Practice*. 4(3):559-560, 1977.

17. Eaton, Marshall and Scherger, Joseph: Health Team Function: Testing a Method for Improvement. *Journal of Family Practice*. 6(1):101-107, 1978.

18. Rubin, IM, et al: *Improving the Co-ordination of Care: A Program for Health Team Development*. Cambridge, Massachusetts: Ballinger, 1975.

This manual and the article by Eaton above describe "team development" processes for improving health team function, e.g., group and individual goals, roles, decision-making and communication. Eaton's modification of the program shortens the time required from 21 to 10 hours.

19. Dunn, John N: The First Month in Family Practice Residency Training. *Journal of Family Practice*. 6(5):1105-1106, 1978.

The author describes the professional and human needs of the beginning resident and lists realistic objectives for the first month of a residency program.

Curriculum and Course Development

A number of curriculum guides have been produced by the Society of Teachers of Family Medicine and several others are in the process of preparation. Already available are:

1. Teaching Sports Medicine and Recreation to Family Practice Residents (1981)

2. Medical Practice Management Training (1978)

3. Patient Education: A Handbook for Teachers (1979)

4. Behavioural Science in Family Medicine. STFM Task Force on Behavioural Science. (1979)
5. The Family in Family Medicine Curriculum (1981)
6. Report of the STFM Task Force on Pre-Doctoral Education (1981)
In preparation are Curriculum Guidelines on Substance Abuse and Curriculum Guidelines on School Health

1. Wright, Albert R: Beyond Behavioural Objectives. *Educational Technology* 12:9-14, July, 1972.

2. Bligh, Donald, et al: *Teaching Students*. Devon, England: Exeter University Teaching Services, 1975, pp. 281.

3. Mager, Robert F and Beach, Kenneth M, Jr: *Developing Vocational Instruction*. Palo Alto, California: Fearon Publishers.

4. Banatly, Bela H: *Instructional Systems*. Palo Alto, California: Fearon Publishers, 1968.

5. Geyman, John P (editor): Family Practice in the Medical School—Nine Case Reports on Developments in Family Practice Education and Research 1970-1977. *The Journal of Family Practice*. (Special report) 5(1):34-38, 1977.

6. Mager, Robert F: *Preparing Instructional Objectives*. 2nd edition. Palo Alto, California: Fearon Publishers, 1977, pp. 59.

A beautifully written, brief 'programmed text' on behavioral objectives. Mager presents a compelling case for objectives and describes how to prepare them.

7. Hyman, Ronald T: Behavioural Objectives in Teaching, in *Ways of Teaching*. 2nd edition. Toronto: J.B. Lippincott Co., 1974, Ch. 2.

8. Pugh, Elizabeth Wyn; Lloyd GJ and McIntyre, Neil: Relevance of Educational Objectives for Medical Education. *British Medical Journal* 3:688-691, 1975.

9. McNeil, John D: *Curriculum—A Comprehensive Introduction*. Boston: Little, Brown and Co., 1977, pp. 333.

This is a textbook that describes conceptions of curriculum, technical skills in curriculum development, or-

ganizing the curriculum for effective learning and research in curriculum.

10. Rowntree, D: *Educational Technology in Curriculum Development*. London: Harper and Row, 1974.

11. Tanner, Daniel and Tanner, Laurel N: *Curriculum Development—Theory Into Practice*. 2nd edition. New York: Macmillan Publishing Co., 1980, pp. 776.

This is the major textbook of curriculum. The authors discuss changing conceptions of curriculum and various sources of curriculum theory. There are chapters discussing the history of curriculum development and modern attempts to develop and integrate curriculum. The authors conclude with several chapters on how to improve curriculum (See also Gagne and Briggs).

12. Mager, Robert F: *Developing Attitude Toward Learning*. Palo Alto, California: Fearon Publishers, 1968, pp. 104.

Mager discusses the importance of attitudes in learning and presents an organized approach to course design—developing objectives, methods to influence attitudes and evaluating results. Mager's engaging and witty style makes this fun to read.

13. Task Force on Objectives: *A Resource of Objectives for Training in Family Medicine: An 'Atlas'*. Kansas City, Missouri: Society of Teachers of Family Medicine, 1979.

This manual tabulates programs that have objectives for specific content areas and types of educational experiences available for each U.S. family practice program. A table also lists the different functions served by objectives (e.g., to communicate expectations to learners, to plan teaching activities, to establish grades, etc.).

14. Department of Family and Community Medicine: *Clinical Instruction Series—Basic Principles of Instructional Systems Design*. University of Missouri-Columbia, School of Medicine, 1979, pp. 125.

This is a self-instructional manual that outlines a logical approach to designing a course or curriculum based on Gagne's and Briggs' *Principles of Instructional Design*. It is well de-

signed with a pretest and post-test for each chapter.

15. Abrahamson, Stephen: Diseases of the Curriculum. *Journal of Medical Education* 53:951-957, 1978.

The author describes nine common 'diseases' of curriculum: Curriculo-sclerosis ('Hardening of the categories')—an extreme form of departmentalization); Carcinoma of the curriculum—uncontrollable growth of one segment of the curriculum; Curriculoarthritis—a problem at the interphase (articulation) between adjacent or related segments of the curriculum; Curriculum disesthesia (curriculum malaise); Iatrogenic curricularitis—the result of thoughtless and constant shifting, modifying and adjusting; Curriculum hypertrophy or curriculomegaly—cramming more and more into limited space; Idiopathic curricularitis—an attempt to cover up bad teaching by arguing something isn't right with the curriculum; Intercurrent curricularitis—failure of the curriculum to respond to social change, and Curriculum ossification.

Evaluation of Learning

1. Fleming, PR; Sanderson, PH; Stokes, JF and Walton, HS: *Examinations in Medicine*. Edinburgh: Livingstone, 1976, pp. 115.

2. Fabb, WE (editor): *WONCA Examination Handbook*. Adelaide, Australia: WONCA, 1976, pp. 150.

3. Bloom, Benjamin S; Hastings, J. Thomas and Madaus, George F: *Handbook on Formative and Summative Evaluation of Student Learning*. Toronto: McGraw-Hill, 1971.

4. McGuire, Christine; Solomon, Lawrence and Bashook, Phillip G: *Construction and Use of Written Simulations*. The Psychological Corporation, 1976.

5. Corley, John B: *Evaluating Residency Training—An Operational Prototype*. Charleston: Medical University Press, 1976, pp. 190.

This brief handbook outlines the philosophy and practice of evaluation in the Department of Family Practice at the Medical University of South Carolina. This is not a textbook on

evaluation but rather a description of how one family practice program evaluates its residents, faculty and the program itself. One of the main values of the book is in the appendices to each chapter in which there are copies of the numerous evaluation forms used. The major criticism of this useful resource-book is the absence of any measures of reliability or validity for any of the instruments described.

6. Corley, John B: In-Training Residency Evaluation. *Journal of Family Practice* 3(5):499-504, 1976.

7. Eble, RL: *Essentials of Educational Measurement*. Englewood Cliffs, New Jersey: Prentice-Hall, 1972.

8. Hodgkin, Keith and Knox, JDE: *Problem Centred Learning—The Modified Essay Questions in Medical Education*. Edinburgh: Churchill-Livingstone, 1975, pp. 152.

9. Freeman, James and Byrne, PS: *The Assessment of Postgraduate Training in General Practice*. London: Society for Research into Higher Education, 1973, pp. 153.

10. American Board of Pediatrics: *Foundations for Evaluating the Competency of Pediatricians*, 1974.

The competencies of the pediatrician are outlined in a matrix associating tasks and abilities. This results in 15 separate functions. There is a list of performance criteria for each function.

11. Gronlund, Norman E: *Measurement and Evaluation in Teaching*. 3rd edition. London: Collier-Macmillan Publishers, 1976.

This well-written text focuses on evaluation of learning as a teaching tool. Written primarily for teachers of elementary and high school, it is a useful introductory text for the teacher of medical school.

12. Murray, Harry G: *Evaluating University Teaching: A Review of Research*. Toronto: Ontario Confederation of University Faculty Associations, 1980, pp. 64.

This monograph provides a non-technical review of current research on the evaluation of college teaching with major emphasis on empirical as op-

posed to purely theoretical or rhetorical studies, and studies appearing since the earlier OCUFA publication on teaching evaluation (Murray, 1973). There are chapters on reliability and validity of student ratings, and on using evaluation data for the improvement of teaching and in personnel decisions.

13. Morgan, Margaret K and Irby, David M: *Evaluating Clinical Competence in the Health Professions*. Saint Louis: The C.V. Mosby Co., 1978, pp. 316.

This book was written to assist health professions educators to improve their skills and procedures for evaluating student performance in hospitals, laboratories and health care clinics. There are sections on assessment techniques, implementation considerations, and clinical evaluation models in the health professions.

14. Department of Family and Community Medicine: *Clinical Instruction Series—Evaluation in an Educational Setting*. University of Missouri-Columbia School of Medicine, 1979, pp. 68.

This is a self-instructional manual that outlines an approach to evaluation as an eight step process that involves: goals; activities; types of data; sampling; data gathering instruments; debugging the techniques of data collection; collection of data, and evaluating data.

15. Knapper, Christopher (editor): *If Teaching is Important*. Toronto: Clarke, Irwin and Co., 1977.

16. McWhinney, IR; Molineux, JE; Hennen, BKE and Gibson, GA: The Evolution and Evaluation of a Clinical Clerkship in Family Medicine. *Journal of Family Practice*. 4(6):1093-1099, 1977.

17. Molineux, JE; Hennen, BKE and McWhinney, IR: In-Training Performance Assessment in Family Practice. *Journal of Family Practice*. 3:405-408, 1976.

18. Rippey, Robert M: *The Evaluation of Teaching in Medical Schools*. New York: Springer Publishing Co., 1981, vol. 2 of Springer Series on Medical education.

19. Guba, Egon G and Lincoln, Yvonna S: *Effective Evaluation—Improving the Usefulness of Evalua-*

tion Results Through Responsive and Naturalistic Approaches. San Francisco: Jossey-Bass, 1981.

20. Payne, David A (editor): *Recent Developments in Affective Measurement. New Directions for Testing and Measurement*. San Francisco: Jossey-Bass, No. 7. 1980.

21. Schroder, William B (guest editor): *Measuring Achievement: Progress Over a Decade. New Directions for Testing and Measurement*. San Francisco: Jossey-Bass, 1980. No. 5.

22. Maguire, GP; Clarke, D and Jolley, B: An experimental Comparison of Three Courses in History-Taking Skills for Medical Students. *Medical Education* 11:175-182, 1977.

This article compares three short courses in history-taking skills for medical students. Each course consisted of three 90 minute sessions. In the 'traditional' mode the teacher lectured, demonstrated and encouraged discussion in a classroom setting. In the didactic mode the teacher made extensive use of printed handouts, videotape demonstrations and group discussion. In the discovery mode the students were encouraged to be much more active in developing their own ideas of how to interview.

The two experimental groups obtained much more information and used many more of the required skills than students assigned to the traditional course. The experimental students were also rated more favorably by the simulators and recorded more data in their case histories.

23. MacGuire, CH: The Oral Examination as a Measurement of Professional Competence. *Journal of Medical Education* 41:267-274, 1966.

24. Hubbard JP, Clemans WV: *Multiple Choice Examination in Medicine—A Guide for Examiner and Examinee*. Philadelphia, Lea and Febiger, 1961.

This small book describes the techniques and values of multiple choice testing. Also included is a useful review of the advantages and disadvantages of multiple choice tests and essay tests and a comparison of the two methods.

Part 5: Education Research Learning to be a Doctor

Educational Research

1. Dunkin, Michael J and Biddle, Bruce J: *The Study of Teaching*. New York and Toronto: Holt, Rinehart and Winston, 1974, pp. 490.

An exhaustive survey of approximately 500 studies of teaching. Part 1 reviews problems of research on teaching and presents a model for looking at variables in classroom teaching. Part 2 reviews research on classroom climate e.g., indirectness; warmth; management and control; the classroom as a social system; knowledge and intellect; logic and linguistics; sequential patterns of classroom behavior. Part 3 summarizes the most important findings from the previously described studies. The concluding chapter provides recommendations for researchers.

2. Travers, Robert MW: *An Introduction to Educational Research*. 4th edition. New York: Macmillan Publishing Co., 1978, pp. 446.

This is a basic small text of educational research. There are particularly interesting chapters in Part 1 on the impact of research on teaching and methods of finding a problem to research. Part 2 reviews the major research on the design and use of classroom materials, studies of development and learning, the social setting of education, observation and evaluation of learning and teaching. Part 3 reviews techniques of educational research—the conduct and design of ex-

periments, instrumentation in research, surveys, prediction studies, historical research and data processing and reporting.

3. Boocock, Sarane Spence: *Sociology of Education—An Introduction*. 2nd edition. Boston: Houghton Mifflin Co., 1980.

The author's purpose is "to describe and place in context some of the best research and the most important findings in the sociology of education". Part 1 includes an overview and discussion of the design of educational research. Part 2 describes the effects of family social position, family structure, sex and individual abilities. Part 3 describes the school as a social system, classroom role structure and role relationships, the class as a social system, effectiveness of the school and the "adolescent society revisited". Part 4 reviews research on the effects of the external environment and crosscultural comparisons.

4. *Proceedings—Annual Conference on Research in Medical Education*. Sponsored by Association of American Medical Colleges.

This is a compilation of papers presented to the Annual Conference containing research on a wide range of topics and including work in progress. It is a valuable resource document.

5. Bennett, SN: Recent Research on Teaching: A Dream, A Belief, and a Model. *British Journal Educational Psychology* 48:127-147, 1978.

This paper presents a conceptual framework of teaching and learning.

Learning depends on students' activities and amount of active learning time on a particular instructional topic. The teacher's task is to manage the time and attention of the learners and to give feedback which provides reinforcement but more importantly gives knowledge of results. Effective teaching involves "the orchestration of a large number of factors, continually shifting teaching behavior to respond to similarly shifting needs".

6. Mayer, Richard E: Information Processing Variables in Learning to Solve Problems. *Review of Educational Research*. 45(4): 525-541, 1975.

7. Lipkin Mack, Jr. and White, Kerr L (editors): *Primary Care Research in 1980—The Collected Abstracts of Four Societies*. New York: The Rockefeller Foundation, 1981.

This valuable resource document presents abstracts of research papers presented by the Ambulatory Pediatrics Association (APA), the North American Primary Care Research Group (NAPCRG), the Society for Research and Education in Primary Care Internal Medicine (SREPCIM), and the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA).

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tional Psychology. 2nd edition. Chicago: Rand McNally College Publishing Company, 1979, pp. 557-586.

2. Hamechek, Don E: Humanistic Psychology: Theoretical—Philosophical Framework and Implications for Teaching, in Treffinger, Donald J; Davis, J Kent and Ripple, Richard E: *Handbook on Teaching Educational Psychology*. New York: Academic Press, 1977, Ch. 7.

3. Rogers, Carl R and Maslow, Abraham H: Humanistic Approaches, in Hunt, David E and Sullivan, Edmund V: *Between Psychology and Education*. Hinsdale, Illinois: The Dryden Press, 1974, pp. 223-245.

4. Rogers, Carl R: *Freedom to Learn*. Columbus, Ohio: Charles E. Merrill Company, 1969.

5. Shaffer, John BP: What is Humanistic Psychology? (Ch. 1); Humanistic Approaches to Education (Ch. 5), in *Humanistic Psychology*. Englewood Cliffs: Prentice-Hall Incorporated, 1978.

6. Wertheimer, Michael: Humanistic Psychology and the Humane but Tough-Minded Psychologist. *American Psychologist* 33:739-745, 1978.

7. Joyce, Bruce and Weil, Marsha: The Personal Family, in *Models of Teaching*. 2nd edition. Englewood Cliffs, New Jersey: Prentice Hall Incorporated, 1980, pp. 144-217.

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9. Miller, John P: *Humanizing the Classroom—Models of Teaching in Affective Education*. New York: Praeger Publishers, 1976.

10. Nash, Paul: Humanism and Humanistic Education in the Eighties: The Lessons of Two Decades. *Journal of Education*. 162(3): 5-17, Summer 1980.

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Research

1. Dunkin, M and Biddle, B: Classroom Climate, in *The Study of*

Teaching. New York: Holt, Rinehart and Winston, 1974. This chapter includes summaries of research on teacher indirectness and teacher warmth.

2. Travers, MW: *An Introduction to Educational Research*, 4th edition. New York: Macmillan Publishing Company, 1978.

3. Farnham-Diggory, Sylvia: The Problem of the Person (Ch. 14); Culture of the School (Ch. 15), in *Cognitive Processes in Education: A Psychological Preparation for Teaching and Curriculum Development*. New York: Harper and Row Publishers, 1972.

The Problem of the Person discusses critical personality dimensions in the classroom. Culture of The School covers the field theory of Kurt Lewin and democratic versus authoritarian social climates.

4. Child, IL: *Humanistic Psychology and the Research Tradition: Their Several Virtues*. New York: Wiley, 1973.

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3. Gazda, George M, et al: *Human Relations Development: A Manual for Educators*. 2nd edition. Boston: Allyn and Bacon, 1977.

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2. Rich, John Martin: *Innovations in Education: Reformers and Their Critics*. 2nd edition. Boston: Allyn and Bacon, 1978.

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l'article de notre ami le Dr J.L.ROUY ,intitulé

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a paru suivi d'une bibliographie appartenant en réalité à un article antérieur.Nous prions l'auteur et les lecteurs de nous en excuser et publions ci après la bibliographie correspondant à ce texte paru dans les "DOCUMENTS DE RECHERCHES EN MEDECINE GENERALE "n° 9 .

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